ENTOMOLOGICAL NEWS

VOL. LXIII

DECEMBER, 1952

No. 10

New Taxonomic Entities in Neotropical Aeshnas (Odonata: Aeshnidae).

By PHILIP P. CALVERT, University of Pennsylvania and Academy of Natural Sciences of Philadelphia

Work on the neotropical species of the genera *Aeshna* and *Coryphaeschna*, announced in the NEWS for October, 1936 (Vol. xlvii–8–: 213–214), has progressed so far that blocks for 45 half-tone plates have been made and the explanation thereof has been typed. The mechanical work of preparing the remainder of the text for the printer is sufficiently extensive as to make it desirable to give nomenclatural status to the names of new species, subgenera and genera adopted by publishing them at this time.

Cockerell established the subgenus Hesperaeschna (Proc. U. S. N. M. 45–2000–: 581, 1913) for *Aeschna californica* Calv., giving as its characters $(1)^*$ "M3 and M4 separated by one cell only at margin of wing, but a short distance before by two rows of cells, owing to the deflection of M4 from the straight course; (2) cell formula of triangles 2,1,1; (3) upper branch of radial sector in a line with the stem; (4) Rs separated from supplementary vein below it by only three rows of cells; (5) fork of Rs a short distance before the beginning of stigma."

The venation of *Aeshna californica* is figured by Needham, Proc. U.S.N.M. 26 (1331), pl. 40, fig. 1, 1903.

The characters given for *Hesperaeschna* by Cockerell will, in many cases, serve to differentiate it from *Aeshna* Fabr., whose

* The numbers in parentheses () are solely to facilitate reference to the characters.

(253)

BC0 1 0 1050

[Dec., 1952]

generotype was fixed by Westwood (1840) as Ae. grandis (Linn.). The venation of grandis is shown in an excellent photographic reproduction by Fröhlich (Odon. u. Orthop. Deutschlands, Fischer, Jena, taf. 3, fig. 10, 1903) and in figures by Lucas (Brit. Dragfls., pl. xviii, 1899) and Longfield (Dragfls. Brit. Isles, edit. 1, 1937, pl. 21, edit. 2, 1949, pl. 30). Cockerell's characters serve to differentiate Hesperaeschna from the figures of some other European Aeshnas (juncea, caerulca, cyanea, but not isosceles (rufescens) or mixta) in Lucas and Longfield and from the figure of the North American Ae. eremita in Walker's Aeshna, p. 15, 1912.

When, however, series of individuals of various species of "Aeshna" are examined, it will be found that most of Cockerell's characters shade from the condition given for Hesperaeschna into those existing in Ae. grandis and its nearest allies. The tables of Bartenef (Zool, Anz. 89 (1-2): 39–44, 1930) for 12 palaearctic species of Aeschna are illuminating in this respect.

Other characters existing in Cockerell's generotype of Hesperaeschna (californica) are more constant; among these are (6) the presence of a ventral tubercle on the first abdominal segment; (7) supratriangular cross-veins present; (8) thorax dark with two lateral pale stripes; (9) males with superior appendages in lateral edge view not bifid nor with an anteapical ventral point, (10) a median dorsal carina on abdominal segment 10 and (11) anal triangle of hind wings 3-celled.

Of the characters 6–11, only 6 and 11 separate *Hesperaeschna* from typical *Aeshna* and from the first ten of the sixteen North American species of *Aeshna* treated by Walker (1912); char. 6 separates it also from *palmata*, *umbrosa* and *constricta* of North America; others, 7–10, in various combinations, separate *Hesperaeschna* from other groups, as indicated below.

Cockerell referred no other species than californica to Hesperaeschna. In its modified definition, as here presented, Hesperaeschna includes californica, biliosa Kennedy (in which the two lateral pale thoracic stripes are broken into spots), confusa Rambur, cornigera Brauer, haarupi Ris, joannisi Martin, manni Williamson, marchali Rambur, peralta Ris, psilus Calvert, punctata Martin, variegata (Fabricius) Ris and williamsoniana Calvert.

Aeshna (Hesperaeschna) cornigera planaltica new subspecies

Proposed for the more southern members of *Ae. cornigera* Brauer which have the pale lateral thoracic (mes- and metepimeral) stripes constricted on the anterior margins by a deep sinus or indentation, in contrast with the more northern typical examples in which these stripes are not constricted. These differences are referred to by Calvert, Biol. Centr.-Amer. Neur. Supplement, p. 400, 1907, and by Ris, Arch. f. Naturges. 82 A (9): 157–8, 1918, but without the application of distinctive names.

Holotype & of planaltica, Nova Teutonia, Santa Catarina, BRAZIL, Dec. 1, 1935, by Fritz Plaumann, coll. Calvert (No. 226). Paratypes: Huigra, Feb. 12-13, 1911, by Samuel N. Rhoads, 18 19, Acad. Nat. Sci. Philadelphia, Abitagua, 5.xi.39, by MacIntyre, 12, coll. C. H. Kennedy, and Naranjapata, by F. Campos R., No. 34, 13, Acad. Nat. Sci. Phila. all three ECUA-DOR; vicinity of Guayabamba, Dept. Amazonas, Aug. 14, 1936, 23, 19, and vicinity of Llangua River, Lallanga, Dept. Cajamarca, June 13, 1936, 13, both localities PERU and by Felix Woytkowski, Mus, Zool. Univ. Mich.; Rio Perené, 13, San Ramon, Oct., 1930, 19, La Merced, Chancamayo, 19, from Dr. P. Martin, and Oxapampa, "Staudinger vd.", 2d, all PERU, coll. J. Cowley; Sapucay, PARAGUAY, Nov. & Dec., 1899, by W. T. Foster, 33, U. S. Nation. Mus.; Nova Teutonia, Brazil, as above for holotype, Nov. to March, 83, 19, coll. C. H. Kennedy, 63, 39, coll. Calvert; Buschental, Dept. San José, Nov. & Dec., 1934, 23, and Aigua, 13, by H. Schneider, both URUGUAY, coll. J. Cowley.

The proposed name *planaltica* refers to the area Plano Alto, as shown on maps, pls. xi and xii, of Haseman's "Some Factors of Geographical Distribution in South America" (Annals New York Acad. Sci. xxii, 1912).

Cornigera planaltica and c. cornigera meet at Abitagua, Ecuador. As indicated in the list of types above, planaltica extends

from Ecuador to Uruguay, and is the only form of *cornigera* known to me to occur south of 15 degrees South Latitude. *C. cornigera* reaches from Mexico to Bolivia.

For the three neotropical species, *brevifrons* Hagen, *intricata* Martin and *vigintipunctata* Ris, the new subgenus Marmaraeschna is proposed, with *intricata* as generotype. Its characters are (12) abdominal segment 1 with a ventral tubercle; (13)supratriangular cross veins present; (14) thorax pale with scattered black marks; (15) vein M1a beginning proximal to the level of the stigma or under the proximal end or proximal half of the stigma; males with (16) a mid-dorsal longitudinal carina on abdominal segment 10, (17) superior appendages, in lateral edge view, with the apex not bifid nor with an anteapical ventral point, (18) anal triangle 3-celled.

The name Marmaraeschna, from the Greek μάρμαρος, marble, and Aeschna, has been suggested by the use of the word "marbré" by Martin in his description of the thorax of *intricata* (1908, p. 59) and of "marmoriert" applied by Ris (1918, p. 164) to the thorax of *vigintipunctata*.

Character 14 separates *Marmaracschna* from all its allied subgenera and genera, also 12 from typical subgenus *Aeshna* and from *Coryphaeschna*, 13 and 15 from the subgenus *Neureclipa* (see below), 16 from *Coryphaeschna* and 17 from *Schizuraeschna* (also below).

For the nearctic-neotropical group, multicolor Hagen, mutata Hagen, jalapensis Williamson and dugesi Calvert, the new subgenus Schizuraeschna is proposed, with multicolor as the generotype; the name is from the Greek $\sigma_{\chi \iota} \zeta_{\omega}$, to split, ovpa, tail, and Aeschna, in allusion to the bifid apex of each male superior appendage. The characters are (19) abdominal segment 1 with a ventral tubercle; (20) supratriangular cross-veins present; (21) thorax dark with two pale oblique lateral stripes; (22) veil M1a beginning distal to the level of the stigma, or under the distal end thereof; (23) cell formula of discoidal triangles 2,1,1(.1); (24) internal triangles 2-celled; males with (25) a mid-dorsal longitudinal carina on abdominal segment 10, (26) superior appendages, in lateral edge view, bifid in the apical fourth or less, the lower division much shorter than the upper and in one species (dugesi) reduced to an inferior anteapical point, (27) anal triangle of the hind wings 3-celled. Character 26 distinguishes Schizuraeschna from all its allied genera and subgenera, and in addition 19 separates it from the typical subgenus Aeshna, 20, 23 and 24 from the subgenus Neureclipa (see below), 21 and 22 from the subgenus Marmaraeschna, 19, 25 and 27 from Coryphaeschna, 24, 27 and the absence in the male of the posterior ventral teeth of abdominal segment 1, described below under Castoraeschna, from that genus.

The genus *Neureclipa*, here relegated to subgeneric rank, was proposed by Navás (Revista Museu Paulista 8: 478, 1911) for *bonariensis* Rambur and *litigatrix* Navás, with the following characters; (28) hypertrigonal (supratriangular) space in each wing with no cross-veins, male (29) having the 10th (abdominal) segment with a dorsal tooth and (30) the superior cerci with an inferior tooth, "otherwise as in *Aeschna*." As Navás did not specify a generotype, as he mentions *bonariensis* first and as *litigatrix* may not be specifically different, *bonariensis* is here fixed as the generotype.

The following are here added as subgeneric characters of *Neureclipa*: (31) abdominal segment 1 with a ventral tubercle; (32) vein M1a beginning at the level of the distal half, or distal end, of the stigma, or distal to the level of the stigma; (33) thorax with two oblique pale lateral stripes; (34) cell formula of discoidal triangles usually 1,1,1; (35) internal triangles usually 1-celled; males with (36) anal triangle of the hind wings 3-celled, (37) superior appendages, in lateral edge view, not bifid at the apex nor with an inferior anteapical point.

Neureclipa is differentiated from typical Aeshna by characters 28, 31, 34, 35 and 36, from Hesperaeschna by 28 (and from some of its species by 34 and 35), from Marmaraeschna by 28, 32 and 33, from Schizuraeschna by 28, 34, 35 and 37, from Coryphaeschna and Castoraeschna (see below) by Rs forking proximal to the level of the stigma, with three rows of cells be-

[Dec., 1952

tween the fork at the level of the distal end thereof, and by the proximal side of the discoidal triangle of the hind wings half, or more than half, as long as the hind side, and, in addition, from *Coryphaeschna* by characters 28, 29, 31 and 36. Characters of *Neureclipa* separating it from *Castoraeschna* are the absence of the two ventral posterior teeth of abdominal segment 1 of the male and 28 and 36.

In addition to *bonariensis* (including *litigatrix?*), *Neureclipa* embraces *diffinis* Rambur, *galapagoensis* Currie and two forms here presented as undescribed: N. diffinis absoluta and N. elsia. The pale mesepimeral stripe seems to be the chief differential for the species of *Neureclipa*. It appears to be absent in all studied material of *galapagoensis*; it reaches upward to the upper margins of the mesepimeron and metepisternum in *bonariensis*, elsia, and diffinis absoluta, but only part way ($\frac{3}{4}$ or less) to those upper margins in diffinis diffinis.

Aeshna (Neureclipa) diffinis absoluta new subspecies

 \mathcal{S} . Frons above and face pale cadmium yellow (Smith's Glossary), labium pale clay yellow, stem of black T-spot of frons narrowing forward from base (.9–1.23 mm.) to .33–.57 mm. at almost its junction with the top of the T, bordered on each side by a parallel pale yellow stripe not as wide as the black stem, this in turn followed laterad by an isolated subquadrangular purple brown spot reaching laterad to beyond the level of the end of the top of the T. A pale brown, occasionally black, line on the fronto-nasal suture. Most of the vertex and of the occiput pale yellowish.

Pterothorax a rather pale greenish brown; pale bluish antehumeral stripe occupying a little less than the lower half of the mesepisternum, .74–1.23 mm. long, .25–.33 mm. wide, diverging downward (forward) from its fellow of the opposite side; pale yellow mesepimeral stripe as stated above under the genus, .41–.82 mm. wide at mid-height, nearly straight; a pale yellow metepimeral stripe likewise reaching to the upper margin of its sclerite, .50–.65 mm. wide at mid-height, almost straight, continued on to the sides of abdominal segments 1 and 2. Pale brown markings on dorsum of abdominal segments 3–10 consist of anterior dorsal, mid-dorsal and posterior dorsal spots (AD, MD and PD of Walker, 1912); taken collectively they exceed in area the black which bounds them on 3–7, but AD rapidly decreases on 7 and 8 to zero on 9 and 10.

Wings with 12–14 antenodals on front pair, 8–10 on hind, 6–9 postnodals on front, 8–11 on hind; hind wings with 2 vertical rows of cells in the anal loop (3 rows in one wing out of 14). Pterostigma pale brown ochre to pale Van Dyke brown above, in some paler at distal end, below gamboge; membranule brown, basal 4th to 5th white.

2. Differs from the male as follows: Face a little darker; lateral genital plates one-half as long as ovipositor.

Dimensions: Abdomen (excluding appendages) 334-35, 232.5-36; hind wing 334-35, 235.5-37; superior appendages 34.34-4.75, 23.8-4.5; pterostigma 32.45-3.45, 22.9-3.27 mm.

Holotype & vicinity of Concepcion, PERU, April 7-8, 1935, by Felix Woytkowski, Mus. Zool. Univ. Mich. Allotype Q and paratypes 3 &, 3 Q, same data as for holotype; also paratypes 7 &, 1 Q, same locality, collector and museum, but dated April 26-27, 1935, and 1 Q Cotahuasi, Peru, 9000 feet, October, 1911, Yale Peruv. Exp. in U. S. National Museum.

Distribution: Concepcion and Cotahuasi, PERU.

The proposed subspecific name, *absoluta*, refers to the completeness of the pale epimeral stripes in that they reach upward to the upper margin of their respective sclerites.

In *diffinis diffinis* Rambur the epimeral stripes reach upward only to three-fourths or less of the height of the sclerites and the geographical distribution is from Valparaiso to Filuca, Chile, on the Pacific slope, and Montevideo and Buenos Aires on the Atlantic slope, of the material which I have examined. Navás (1933, Revista Acad. Cien, Madrid 29: 54) has cited *diffinis* from Arequipa, Peru, and Porter (1897, Revista Chil. Hist. Nat. 1: 13, 1899, 3: 181) from Copiapo and the province of Atacama, Chile; whether these more northern examples of *diffinis* are *d. diffinis* or *d. absoluta* is still to be determined.

Bonariensis is like diffinis absoluta in having the long pale epimeral stripes and a pale antehumeral stripe on the lower half of the mesepisternum. The geographical distribution of bonariensis is very different, ranging from the States of Minas Geraes and Paraná in Brazil and San Juan Province in Argentina to Montevideo and Buenos Aires; there is also a single Chilean record, viz. Las Mercedes by Gonzulla & Ruiz (1928). I have designated absoluta as a subspecies of diffinis rather than of bonariensis because of the predominantly Pacific distribution of the first two.

Aeshna (Neureclipa) elsia new species

♂. Frons pale clay yellow (Smith's Glossary, pl. iv, 22), superiorly with a black T-spot whose stem narrows from base (.65–1.23 mm. wide) anteriorly to .41–.65 mm. almost at its junction with the top of the T; stem bordered each side with yellow which is not as wide as the base of the stem but is wider than the stem where the latter joins the top of the T.* This bordering yellow followed laterad by greenish blue which extends laterad on to the side of the frons beyond the level of the acute end of the top of the T. Anterior surface of frons pale brownish in its upper half, very pale bluish in its lower half. Fronto-nasal suture with a brown line.* Clypeus (nasus + rhinarium) very pale bluish. Labrum near gamboge or pale bluish. Labium pale bluish to pale clay yellow. Most of the vertex and of the occiput pale clay yellow or bluish.

Pterothorax pale greenish brown, no pale antehumeral stripe. Mesepimeral stripe often faded in dried specimens, bluish white, reaching upward to the upper margins of mesepimeron and metepisternum, .9–1.6 mm. wide at mid-height, ending below in a crescentic yellow spot, convexity ventrad; this yellow spot is often all that is visible of the mesepimeral stripe in many specimens. Metepimeral stripe bluish white, reaching to the

* The male from Patagonia, No. 134, has the T-spot and the blue spot following the bordering yellow as described above for *diffinis absoluta* and has a well-marked black line on the fronto-nasal suture. upper margin of its sclerite, 1.2–1.6 mm. wide at mid-height, lower end narrowing to .5 mm., yellowish.

Abdominal segment 1 largely brown ochre on the sides, dorsally, as well as the anterior dorsal half of 2, Van Dyke brown. Most of the posterior half of 2 and the mid-dorsal (MD of Walker, 1912), posterior dorsal (PD), antero-lateral (AL), mid-lateral (ML) and posterior lateral (PL) spots on 3–8 and much of the posterior half of 9 and 10 bright blue. Remainder of the abdominal tergites black, or on 3–5 dark brown. Mr. Woytkowski, the collector, noted on the envelope of the Chosica male: "has fine very vivid blue marks, which have become dull after drying."

Wings with 11–14 antenodals on front pair, 8–9 on hind; 7–9 postnodals on front, 7–10 on hind; hind wings with 2 vertical rows of cells in the anal loop, occasionally (7 wings out of 26) 3 cells at the lower end. Pterostigma near Van Dyke brown above, paler at the extreme ends, pale brown to pale clay yellow below. Membranule brown, whitish at extreme base.

Q differs from the male: (In the two females from Miñi-Miñi the anterior surface of the frons and clypeus lavender, labium pale rosaceous.) Fronto-nasal suture with a very pale brown line. Blue of the abdomen replaced by lilaceous or a paler blue, the black replaced by dark brown (Roman sepia or Cologne earth of Smith), which is less extensive than the black of the male. Pterostigma pale brown ochre (or burnt siena, Azapa) above, pale brown pink (Smith) or pale clay yellow below; basal sixth to third of membranule whitish. Lateral genital plates one half as long as the ovipositor.

Dimensions: Abdomen (excluding appendages) 37-40, 935-39; hind wing 35-40, 936.5-40; superior appendages 34.42-4.82, 93.93-4.25; pterostigma, costal edge, front wing, 32.6-3.35, 92.95-3.52 mm.

Holotype male and allotype female vicinity of Pacasmayo, PERU, May 20, 1936, a mating pair taken over a pond between sand dunes, Felix Woytkowski collector, No. 2222, Mus. Zool. Univ. Mich. Paratypes: same locality, date and collector $1 \stackrel{\circ}{\xrightarrow{}} (P.P.C. no. xix)$; vicinity of Villa, 120 m. a(bove) s(ea)

lev (el), Dept. Lima, Peru, Mar. 15, 1936, same collector, 6 Å 1 ♀; Repartición, 140 m. a. s. level, Dept. Lima, Peru, 1 ♂ Feb. 28, 1 ♂ Feb. 29, 1936, same collector; vicinity of Chosica, 990 m. a. s. level, Dept. Lima, Peru, Mar. 1, 1936, 1 ♂, same collector, Mus. Zool. Univ. Mich. Miñi-Miñi, 18.ii.48, 2 ♀ and Azapa, 1.iii.48, 1 ♀, CHILE, Cornell Univ. Coroicó, Chile, May, Steind[achner?], 1 ♂, 1 ♀, Mus. Comp. Zool. Patagonia 1 ♂, Amer. Mus. Nat. Hist. (P.P.C. no. 134).

Named for Elsie Lincoln Rosner who made the great majority of the drawings referred to in the opening paragraph of this paper and helped in tabulating characters.

As stated above under the subgenus Neurcelipa, N. elsia differs from N. diffinis diffinis and agrees with N. d. absoluta and bonariensis in having the pale epimeral stripes reaching upward to the upper margins of their respective sclerites. It differs from bonariensis in geographical distribution which has been given above under d. absoluta. The distribution areas of elsia and of d. absoluta, both in Peru, are not as widely separated and additional material may show that they overlap. Elsia has the epimeral stripes bluish white, terminating inferiorily in a yellow spot, and wider at mid-height (.9–1.6 mm.) while in bonariensis and in d. absoluta they are yellow throughout and narrower (.41–.74 mm.) at mid-height. When, as so often happens, the epimeral stripes are faded in specimens of clsia, very close examination of them under a lens is necessary for identification.

Coryphaeschna secreta new species

 \mathcal{S} . Frons superiorly and face, including lips, pale brown ochre (Smith's Glossary, pl. iv, 36), no T-spot on dorsum of frons, vertex pale Van Dyke brown.

Pterothorax darker Van Dyke brown; antehumeral, mes- and metepimeral stripes green, all narrower than the intervening brown, the green antehumeral narrowing inferiorly.

Abdomen a pale reddish brown (faded?), paired pale green anterior dorsal, median dorsal and posterior dorsal spots on segments 4–6, posterior dorsal also on 7(?) and 8; 10 with a low continuous mid-dorsal carina.

Superior appendages in bad condition, the left 5.15 mm. long, the right broken off at .29 length, the left with a piece .57 mm. long broken out of the lateral margin just beyond half length; left appendage with lateral margin slightly sinuate in the middle third of its length, inner (mesal) margin narrowed to .2 of appendage length, thence gradually widening to mid-length, thence narrowing to .83 length, whence the appendage is of nearly uniform width to the rounded apex; distal half of inner margin with hairs longer than appendage width; a distinct, inferior, subbasal tooth at .14 of appendage length. Inferior appendage broken off (at somewhat more than half length?).

Wings: area between Cu1 and Cu2 on hind pair with one row of cells throughout; this character variable in C. *luteipennis* Burm.

Dimensions: Abdomen (excluding appendages) 51, hind wing 47, sup. apps. 5.15, pterostigma, costal edge, front wing, 3.93 mm.

♀ unknown.

Holotype male : S. Diego d 1 Baños, CUBA, Apr. 14 00 Palmer & Riley U. S. National Museum.

The proposed specific name refers to the long concealment of this large insect in spite of much biological exploration of Cuba.

Secreta falls under rubrics F, G of the key to the species of Aeschna, Biol. Centr.-Amer. Neur., p. 180, and under rubrics A, 1, 2 (in part) of the key to the species of Coryphaeschna by Geijskes, Ent. News liv (3): 63, March, 1943. Its nearest allies by these two keys are luteipennis Burm. and ingens Rambur. From the males of luteipennis and rufipennis Kennedy it differs in lacking a quadrangular excision on the inner margin of the superior appendages. From ingens male it differs in its smaller size; abdomen 51 mm. vs. 58–61 mm. (ingens), hind wing 47 vs. 55–59, sup, apps. 5.15 vs. 7–7.75, pter. 3.93 vs. 4.83–6. mm., and from both species by the lack of a dark T-spot on the dorsum of the frons.

Coryphaeschna viriditas new name for *C. virens* Rambur preoccupied

Aeschna virens Rambur, 1842, Hist. Nat. Ins. Névroptères, p. 193, is a homonym of *Ae. virens* Charpentier, 1840, Libel. Europ., p. 101, tab. x, xii.

CASTORAESCHNA new genus

(38) Subnodal sector (Rs) forking at the level of from onehalf the last postnodal costal cell to three postnodal costal cells proximal to the stigma, or, more rarely, at the level of the proximal end of the stigma, with (39) 3 or 4, rarely 2, rows of cells between the fork at the level of the distal end of the stigma; (40) proximal side of the discoidal triangle of the hind wings always shorter than one-half the length of the hind side; (41) sternite of abdominal segment 1 with a median tubercle bearing spinules, hairs, or both; (42) internal triangles 1-celled; males with (43) ventral posterior angles of tergite of abdominal segment 1 each prolonged into an acute mesad-projecting tooth; * (44) anal triangle of the hind wings 2-celled; (45) glans penis with a thread-like dorsal cornu. Generotype: Aeschna castor Brauer.

The generic name proposed is a combination of the specific name of the generotype and *Aeschna*.

This genus differs from all other genera of American Aeshninae by character 43 and in addition from *Coryphaeschna* by 41, and usually from the subgenera of *Aeshna* by 40. It includes also *colorata* Martin, *coronata* Ris, *januaria* Hagen and *longfieldae* Kimmins.

The claim of this group of species to generic rank was recognized by Ris (1918, Arch. Naturges., 82 A (9): 169) and by Geijskes (1943, Ent. News liv (3): 61), but no one seems to have given the group a generic name.

* Figures of these teeth in two species of *Castoraeschna* are given by Kimmins, 1929, Ann. & Mag. Nat. Hist. (10) iii: 490, figs. 1A and B.